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TRANSMITTAL LETTER TO THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US) CONCERNING A FILING UNDER 35 U.S.C. 371

U.S. APPLICATION NO. (If known see 37 C.F.R. 1.5)

09/647332

INTERNATIONAL APPLICATION NO	INTERNATIONAL FILING DATE	(EARLIEST) PRIORITY DATE CLAIMED
PCT/JP00/00461	28 January 2000	29 January 1999

TITLE OF INVENTION **TRANSMITTING APPARATUS AND RECEIVING APPARATUS**

APPLICANTS FOR DO/EO/US **Yoshihisa GONNO, Fumihiko NISHIO, Kazuo HARAOKA, Kazuhiko TAKABAYASHI and Yasuaki YAMAGISHI**

Applicants herewith submit to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1. ☒ This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.

2. ☐ This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371.

3. ☒ This express request to begin national examination procedures (35 U.S.C. 371(f)) at any time rather than delay examination until the expiration of the applicable time limit set in 35 U.S.C. 371(b) and PCT Articles 22 and 39(1).

4. ☐ A proper Demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date.

5. ☒ A copy of the International Application as filed (35 U.S.C. 371(c)(2))
   a. ☐ is transmitted herewith (required only if not transmitted by the International Bureau).
   b. ☒ has been transmitted by the International Bureau.
   c. ☐ is not required, as the application was filed in the United States Receiving Office (RO/US).

6. ☒ A translation of the International Application into English (35 U.S.C. 371(c)(2)), including **12** sheets of formal drawings and a copy of the International Search Report.

7. ☒ Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3))
   a. ☐ are transmitted herewith (required only if not transmitted by the International Bureau).
   b. ☐ have been transmitted by the International Bureau.
   c. ☐ have not been made; however, the time limit for making such amendments has NOT expired.
   d. ☒ have not been made and will not be made.

8. ☐ A translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).

9. ☒ An oath or declaration of the inventors (35 U.S.C. 371(c)(4)).

10. ☐ The annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)).

Items 11. to 16. below concern other document(s) or information included:

11. ☒ An Information Disclosure Statement under 37 CFR 1.97 and 1.98.

12. ☒ An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.

13. ☒ A FIRST preliminary amendment.
    ☐ A SECOND or SUBSEQUENT preliminary amendment.

14. ☐ A substitute specification.

15. ☐ A change of power of attorney and/or address letter.

16. ☒ Other items or information:
    PCT/ISA/210
    PCT/RO/101
    References for IDS

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U.S. APPLICATION NO (If known, see 37 ~~~~ ~50)~	INTERNATIONAL APPLICATION NO	~~NEY'S DOCKET NO.
09/647332	PCT/JP00/00461	406106-02305

17. ☒ The following fees are submitted: (CALCULATIONS /PTO USE ONLY
     Basic National Fee (37 CFR 1.492(a)(1)-(5):
     Search Report has been prepared by the EPO or JPO...................$840.00   ($840.00   (

International preliminary examination fee paid to USTPO (37 CFR 1.482)   ($700.00   (
No international preliminary examination fee paid to USTPO (37 CFR 1.482)   (
but international search fee paid to USTPO (37 CFR 1.445(a)(2))...$770.00   (

Neither international preliminary examination fee (37 CFR 1.482) nor   (
international search fee (37CFR 1.445(a)(2) paid to USTPO...........$1040.00 (

International preliminary examination fee paid to USTPO (37 CFR 1.482)   (
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8 Claims /Number Filed / Number Extra /Rate (		
Total Claims / **8 - 20 =** / **0** /X $18.00	($ 0.00	
Independent Claims / **4 - 3 =** / **1** /X $78.00	($ 78.00	
Multiple dependent claim(s) (if applicable) /+ $260.00	($	

         TOTAL OF ABOVE CALCULATIONS =   ($ **918.00**

Reduction by 1/2 for filing by small entity, if applicable. Verified Small Entity (/
statement must also be filed. (Note 37 CFR 1.9, 1.27, 1.28).   (/

                SUBTOTAL =   ($ **918.00**

Processing fee of **$130.00** for furnishing the English translation later than   (/
☐ 20 ☐ 30 months from the earliest claimed priority date (37 CFR 1.492(f)).+   ($ /

            TOTAL NATIONAL FEE =   ($ **918.00**

Fee for recording the enclosed assignments (37 CFR 1.21(h)). The assignment   ($ 40.00/
must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31). $40.00 per property +   ($ /

           TOTAL FEES ENCLOSED =   ($ **958.00**

                              (Amount to be: /
                              (refunded   /$
                              (charged   /$

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b.   ☐ Please charge my Deposit Account No. 50-0320 in the amount of $_____ to cover the above fees.
         A duplicate copy of this sheet is enclosed.
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overpayment to Deposit Account No. 50-0320. A duplicate copy of this sheet is enclosed.
NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and
granted to restore the application to pending status.

SEND ALL CORRESPONDENCE TO: _____
                                   SIGNATURE

WILLIAM S. FROMMER
FROMMER LAWRENCE & HAUG LLP   WILLIAM S. FROMMER_____
745 FIFTH AVENUE   NAME
NEW YORK, NEW YORK 10151

                                 25,506_____
Dated: September 27, 2000   REGISTRAT ION NUMBER
                                               Form PTO-1390 (REV **10-96**)

PATENT
450106-02305

430 Rec'd PCT/PTO 2 7 SEP 2000

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s) : GONNO et al.

Corresponding Int'l Appln. No. : PCT/JP00/00461

International Filing Date : 28 January 2000

Priority Dates Claimed : 29 January 1999

For : **TRANSMITTING APPARATUS AND RECEIVING APPARATUS**

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PRELIMINARY AMENDMENT

Assistant Commissioner for Patents
Box PCT
Washington, D.C. 20231

Dear Sir:

        Prior to the issuance of the first Office Action, please amend the above-identified

application as follows:

CAD0859

IN THE CLAIMS:

Claim 3, line 24, please delete "or 2";

Claim 4, line 2, please delete "or 2";

Please add new claims 7 and 8 as follows:

--7.   The transmitting apparatus as set forth in claim 2, wherein said meta data schema converting means converts the meta data schema and represents the meta data schema in an MPEG system section format.

8.   The transmitting apparatus as set forth in claim 2, wherein said meta data converting means converts the meta data with the segmentation information and represents the meta data with the segmentation information in a descriptor format of an MPEG system section.--
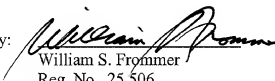
REMARKS

Claim 3 and Claim 4 have been amended to correct the dependency thereof.

An early examination on the merits of this application is respectfully solicited.

Respectfully submitted,
FROMMER LAWRENCE & HAUG LLP

By: William S. Frommer
Reg. No. 25,506
(212) 588-0800

<div align="center">DESCRIPTION</div>

Transmitting Apparatus and Receiving
Apparatus

Technical Field

5   The present invention relates to a
transmitting apparatus and a receiving apparatus that
are used in the field of a technology for delivering
video/audio data to an infinite number of subscribers
and that allow desired data to be effectively selected
10   from a large amount of successive data so as to
receive, store, and browse the selected data.

Related Art

          Many techniques have been proposed as data
delivering systems. For example, on the Internet, data
15   is delivered using WWW (World Wide Web) corresponding
to HTTP (Hyper Text Transfer Protocol). To retrieve
desired data from a huge amount of data collection of
WWW (World Wide Web), the use of meta data is becoming
common. The meta data contains a data structure. As
20   an example of systems that selectively receive data
corresponding to meta data from WWW, PICS (Platform for
Internet Content Selection) and RDF (Resource
Description Framework) have been proposed.

          In a digital broadcast, meta data such as a
25   program title and broadcast time data that are
structural elements of EPG (Electronic Program Guide)
is transmitted in the format of EIT (Event Information

<div align="center">1</div>

Table). Information of EPG is represented as a section type table or the like referred to as SI (Service Information). A receiver extracts relevant information from the table and displays the extracted information on its screen. With EPG, the user can select data as programs from successive broadcast data.

Although a digital broadcast is mono-directionally transmitted to a very large number of terminal units, a large amount of data can be simultaneously transmitted. Thus, it is advantageous to merge a digital broadcast and a network. In reality, meta data is added to contents data on the Internet or contents data of a digital broadcast.

The format of meta data of a digital broadcast (for example, EIT) is not compatible with the format of meta data of a conventional network such as the Internet. To solve this problem, both types of meta data are used as they are. However, in a system using WWW such as PICS or RDF, since meta data is represented in a text format, the transmission efficiency is not high. In addition, to selectively receive meta data through a broad band broadcast network, the receiver side should filter received data at high speed. However, in the text format, it is difficult to filter received data at high speed.

On the other hand, meta data such as EIT of a digital broadcast has a dedicated format. The meta

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data is transmitted using predetermined descriptors. In other words, a converting method for converting meta data such as EIT into data corresponding to WWW has not been defined. In addition, a method for transmitting flexible meta data such as PICS or RDF corresponding to the MPEG system used in a digital broadcast and a format that represents meta data have not been defined.

To solve these problems, a method for converting such meta data in a format suitable for a digital broadcast has been proposed in a prior patent application (Japanese Patent Application No. Hei 10-170397). In other words, in the prior patent application, as with EPG, meta data corresponding to a RDF model is represented as a section type table referred to as SI.

When contents data on a network such as the Internet is communicated as a digital broadcast, contents data on the network is shorter than contents data of the digital broadcast. Thus, it is preferred to use meta data that is shorter than that of each program. Meta data of EIT of a digital broadcast is used to select successive data of each program. In other words, it is difficult to represent meta data for partial data and the relation of meta data of partial data. Thus, it cannot be said that meta data for a digital broadcast is suitable for representing contents data on the network.

The user can temporarily store contents data of a digital broadcast. When necessary, the user can retrieve contents data from a storage medium and reproduce the retrieved contents data. In this case, using meta data of each program, the user cannot arrange the structure of programs corresponding to his or her favorite. In addition, when a storage medium is changed, segmentation information cannot be used.

Disclosure of the Invention

Therefore, an object of the present invention is to provide a transmitting apparatus and a receiving apparatus that allow data to be effectively delivered and flexibly and selectively received corresponding to a user's favorite in such a manner that contents data is segmented and meta data is correlated with any partial data.

To accomplish the above-described object, the present invention is a transmitting apparatus for providing contents data composed of successive data, comprising a meta data schema storing means for storing the data structure of meta data of the contents data, a contents segmenting means for generating segmentation information of the contents data, a meta data combining means for correlating the segmentation information of the contents data with the meta data, a meta data converting means for converting the meta data with the segmentation data combined by said meta data combining

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means in a transmission format, a meta data schema converting means for converting the meta data schema stored in said meta data schema storing means in the transmission format, and a transmitting means for transmitting the meta data with the segmentation information in the transmission format, the meta data schema in the transmission format, and the contents data through a transmission path.

In addition, the present invention is a transmitting apparatus for providing contents data composed of successive data, comprising a meta data schema storing means for storing the data structure of meta data of the contents data, a contents segmenting means for generating segmentation information of the contents data, a segmentation information storing means for storing the segmentation information of the contents data, a meta data combining means for correlating an identifier of the segmentation information with the meta data, a meta data converting means for converting the meta data with the identifier combined by said meta data combining means in a transmission format, a meta data schema converting means for converting the meta data schema stored in said meta data schema storing means in the transmission format, a segmentation information converting means for converting the segmentation information stored in said segmentation information storing means in the

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transmission format, and a transmitting means for
transmitting the meta data with the identifier in the
transmission format, the meta data schema in the
transmission format, the segmentation information, and
5   the contents data through a transmission path.

          In addition, the present invention is a
receiving apparatus for presenting contents data
composed of successive data, comprising a meta data
schema storing means for storing the data structure of
10   meta data of the contents data, a meta data storing
means for storing meta data with segmentation
information of the contents data, a user profile
operating means for operating user's favorite
information, a meta data analyzing means for collating
15   the meta data schema, the meta data, and the user
profile, a contents reproduction controlling means for
controlling the reproduction of the contents data
corresponding to segmentation information that is
output from said meta data analyzing means, a receiving
20   means for receiving meta data with segmentation
information in a transmission format, a meta data
schema in the transmission format, and contents data
through a transmission path, a meta data schema
restoring means for restoring the meta data schema in
25   the transmission format into meta data schema in a
storage format of said meta data schema storing means,
and a meta data restoring means for restoring the meta

                          6

data with the segmentation information in the
transmission format into meta data with segmentation
information in a storage format of said meta data
storing means.

In addition, the present invention is a
receiving apparatus for presenting contents data
composed of successive data, comprising a meta data
schema storing means for storing the data structure of
meta data of the contents data, a meta data storing
means for storing meta data with an identifier of
segmentation information of the contents data, a
segmentation information storing means for storing the
segmentation information, a user profile operating
means for operating user's favorite information, a meta
data analyzing means for collating the meta data
schema, the meta data, and the user profile, a contents
reproduction controlling means for controlling the
reproduction of the contents data corresponding to
segmentation information that is output from said meta
data analyzing means, a receiving means for receiving
meta data with the identifier in a transmission format,
a meta data schema in the transmission format,
segmentation information in the transmission format,
and contents data through a transmission path, a meta
data schema restoring means for restoring the meta data
schema in the transmission format into meta data schema
in a storage format of said meta data schema storing

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means, a meta data restoring means for restoring the meta data with the identifier in the transmission format into meta data with an identifier in a storage format of said meta data storing means, and a segmentation information restoring means for restoring the segmentation information in the transmission format into segmentation information in a storage format of said segmentation information storing means.

As described above, according to the present invention, since segmentation information of contents data is correlated with meta data and the resultant data is delivered, any segments of successive data can be restructured as contents data corresponding to a user's favorite. Thus, data can be effectively delivered and flexibly and selectively received. In addition, segmentation information and meta data are represented using RDF and XML (Extensible Markup Language) in WWW. The resultant data is converted in a suitable transmission format such as the MPEG-2 format or IP format. Thus, meta data can be more flexibly delivered.

Brief Description of Drawings

Fig. 1 is a block diagram showing a communication system according to the present invention; Fig. 2 is a block diagram showing an example of a broadcasting station according to the embodiment of the present invention; Fig. 3 is a block diagram

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showing an example of a receiving terminal unit according to the embodiment of the present invention; Fig. 4 is a schematic diagram for explaining a segmentation according to the embodiment of the present invention; Fig. 5 is a schematic diagram for explaining segmentation data according to the embodiment of the present invention; Fig. 6 is a schematic diagram for explaining a meta data schema according to the embodiment of the present invention; Fig. 7 is a schematic diagram for explaining meta data with segmentation data according to the embodiment of the present invention; Fig. 8 is a block diagram showing an example of a broadcasting station according to another embodiment of the present invention; Fig. 9 is a block diagram showing an example of a receiving terminal unit according to the other embodiment of the present invention; Fig. 10 is a schematic diagram for explaining a meta data schema according to the other embodiment of the present invention; Fig. 11 is a schematic diagram for explaining segmentation data according to the other embodiment of the present invention; Fig. 12 is a schematic diagram for explaining meta data according to the other embodiment of the present invention; Fig. 13 is a block diagram for explaining a medium converting process according to the other embodiment of the present invention; Fig. 14 is a schematic diagram showing an example of

segmentation data according to the other embodiment of
the present invention; Fig. 15 is a schematic diagram
showing another example of segmentation data according
to the other embodiment of the present invention; and
Fig. 16 is a schematic diagram showing a further
example of segmentation data according to the other
embodiment of the present invention.

Best Modes for Carrying out the Invention

Next, an embodiment of the present invention
will be described. Fig. 1 shows an example of the
structure of a contents delivering system according to
the present invention. Information providers 101a and
101b each have a database. The database stores
contents data, a meta information schema that
represents the structures of meta information of the
contents data, and meta information corresponding to
the contents data. The contents data is for example
WWW pages. The information providers 101a and 101b are
connected to a broadcasting station 102 and receiving
terminal units 103a and 103b through a bidirectional
network 105. The information provider 101 can supply
contents data, a meta data schema, and meta data to the
receiving terminal units 103a and 103b through the
bidirectional network 105.

The broadcasting station 102 has a database
that stores contents data, a meta information schema
that represents the structure of meta information of

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the contents data, and meta information corresponding
to the contents data. The contents data is for example
broadcast programs. The broadcasting station 102 is
connected to the receiving terminal units 103a and 103b
through a broadcasting network 104. The broadcasting
station 102 can supply contents data, a meta
information schema, and meta information to the
receiving terminal units 103a and 103b. In addition,
the broadcasting station 102 can receive contents data,
a meta information schema, and meta information from
the information provider 101 through the bidirectional
network and deliver them to the receiving terminal unit
103 through the broadcasting network 104.

Fig. 2 shows an example of the structure of
the broadcasting station 102. A contents storing
portion 203 stores contents data supplied to the
receiving terminal units 103a and 103b. Contents data
provided by the information providers 101a and 101b may
be temporarily stored to the contents storing portion
203. As with a live program, when contents data is
broadcast while it is being produced, the contents
storing portion 203 may be a cache for temporarily
storing contents data that is monitored.

A meta data schema storing portion 201 stores
a meta data schema that represents the structure of
meta data for contents data stored in the contents
storing portion 203. A meta data schema defines the

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structure of information that is added to program data.
The information added to the program data is for
example "program title", "program genre", "broadcast
time", and "parental guide". The number of meta data
schemas stored in the meta data schema storing portion
201 is not limited to one. A meta data schemas is
identified by a meta data schema identifier.

When contents data is a television program,
"program name", "program genre", and "parental guide"
are added thereto as meta data. When contents data is
a data broadcast, "program name", "program genre", and
"applicable OS" are added thereto as meta data. Since
the structure of meta data added to contents data
varies for each contents data or year by year, there
may be a plurality of meta data schemas. Before meta
data is transmitted, a meta data schema that represents
the structure thereof is transmitted to a receiving
apparatus through the bidirectional network or the
broadcasting network so that the meta data schema can
be updated.

A contents segmenting portion 204 generates
segmentation data for selecting a particular segment
from successive data supplied from the contents storing
portion 203 and supplies the segmentation data to a
meta data combining portion 202. The meta data
combining portion 202 correlates meta data of a
particular segment of successive data with the

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segmentation data corresponding to the structure of the meta data schema, combines the meta data and the segmentation data, and outputs meta data with segmentation data.

For example, as meta data of a particular program or meta data of a segment of a program, segmentation data that identifies the program or the segment is output. In the case that a program is a segment, segmentation data is added to meta data of "program title: seven o'clock news" and "genre: news" and output as meta data with segmentation data. In the case of a segment of a program, segmentation data is added to meta data of "genre of news: politics" and output as meta data with segmentation data. The output data of the meta data combining portion 202 also contains an identifier of the meta data schema of the meta data. In reality, as segmentation data, "start time" and "end time" of the segment or "start time" and "duration" of the segment can be represented in combination.

A meta data schema converting portion 205 converts a meta data schema stored in a meta data schema storing portion 203 in a transmission format. Although the descriptive format of a schema stored in the meta data schema storing portion 203 may vary for each contents data or for each information provider, the meta data schema converting portion 205 converts

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the format of a meta data schema into one transmission
format. In this case, various types of transmission
formats can be used. For example, a meta data schema
can be represented in an MPEG system section format.
The other meta data and segmentation data can be
represented in the similar format.

A meta data converting portion 206 converts
meta data with segmentation data generated by the meta
data combining portion 204 in the transmission format.
The descriptive format of meta data combined by the
meta data combining portion 204 may vary for each
contents data or each information provider. However,
the meta data converting portion 206 converts the
format of meta data into one transmission format. A
contents converting portion 207 converts contents data
of successive data in the transmission format.

A meta data schema transmission controlling
portion 208, a meta data transmission controlling
portion 209, and a contents transmission controlling
portion 210 control the transmissions of a meta data
schema, meta data with segmentation data, and contents
data that have been converted in the transmission
format against a transmission path. In the case of the
broadcasting network 104, it is supposed that the
transmission path for a meta data schema, meta data
with segmentation data, and contents data is a line
corresponding to MPEG-2 system or IP multi-cast. In

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the case of the bidirectional network 105, it is
supposed that the transmission path is a line
corresponding to IP (Internet Protocol) or ATM
(Asynchronous Transfer Mode).

In the broadcasting station, a communication
controlling portion is disposed (not shown in Fig. 2).
The communication controlling portion is connected to
the bidirectional network 105. The communication
controlling portion receives requests for a meta data
schema, meta data, and contents data from the receiving
terminal units 103a and 103b, retrieves a meta data
schema, meta data, and contents data corresponding to
the requests, and supplies them to the receiving
terminal units 103a and 103b. The structure of each of
the information providers 101a and 101b is the same as
the structure of the broadcasting station 102 except
that the former does not have a transmitting portion
that transmits data to the broadcasting network.

Fig. 3 shows an example of the structure of a
receiving terminal unit. A meta data schema reception
controlling portion 301, a meta data reception
controlling portion 302, and a contents reception
controlling portion 303 control the receptions of a
meta data schema, meta data with segmentation data, and
contents data that are transmitted through the network.

The received meta data schema is supplied to
a meta data schema restoring portion 304. The meta

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data schema restoring portion 304 restores the received meta data schema in a format so that the terminal unit can easily use the meta data schema. The restored meta data schema is stored to a meta data schema storing portion 305.   The received meta data with segmentation data is supplied to a meta data restoring portion 306. The meta data restoring portion 306 restores the received meta data with segmentation data in a format so that the terminal unit can easily use the meta data with segmentation data. The restored meta data with segmentation data is stored to a meta data storing portion 307.

        The received contents data is supplied to a contents restoring portion 308. The contents restoring portion 308 restores the received contents data in a format so that the terminal unit can easily use the contents data. The restored contents data is stored to a contents storing portion 309.

        The user of the receiving terminal unit references the meta information schema stored in the meta information schema storing portion 305 with a user profile operating portion 310, generates user unique profile information, and stores the user unique profile information to a user profile storing portion 311.

        A meta data analyzing portion 312 selects only meta data corresponding to the meta data schema stored in the meta data schema storing portion 305 and

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to the user unique profile information stored in the user profile storing portion 311.

Corresponding to the segmentation information contained in the selected meta data, a contents reproduction controlling portion 313 restructures segments of the successive data. A data displaying portion 315 displays the resultant contents data. On the other hand, a meta data display controlling portion 314 controls the meta data displayed on the data displaying portion 315. When a communication controlling portion (not shown) is disposed in the receiving terminal unit, a meta information schema, meta information, and contents data can be requested and received through the bidirectional network 105.

Next, the embodiment of the present invention will be described in more detail. Fig. 4 explains meta data and segmentation data. In Fig. 4, successive data of a program with a channel identifier of Service ID = Svc #1 is shown. In the case of a digital broadcast, a program identifier, for example Event ID = E#5, is added. Such successive data is segmented into for example eight segments. The eight segments are assigned segment identifiers ID = S#1, S#2, ...

As shown in Fig. 5, in successive data, each segment is identified with parameters such as segmentation data composed of start time and duration thereof as well as the above-described segment ID. The

time data is defined in an MPEG-2 stream.

Fig. 6 shows an example of a meta data schema. When a news program is composed of three segments with segment IDs = S#1, S#2, and S#3, it is assumed that the segments are categorized as general, local, politics, economics, and sports. Fig. 7 shows an example of which segmentation data is added to the politics category and the sports category of a news program.

As was described with reference to Fig. 3, when the terminal unit receives meta data with segmentation data, the terminal unit can control the reproduction of contents data corresponding to the segmentation data. Thus, the terminal unit can restructure any segments of the successive data as contents data corresponding to a user's favorite. Thus, data can be effectively delivered and flexibly and selectively received. In addition, segmentation information and meta data are represented using RDF and XML (Extensible Markup Language) in WWW. The resultant data is converted in a suitable transmission format such as the MPEG-2 format or IP format. Thus, meta data can be more flexibly delivered.

Next, another embodiment of the present invention will be described. In the above-described embodiment, segmentation data is added to meta data. However, in the other embodiment, parameters of

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segmentation data are transmitted separately from meta data. In other words, parameters of segmentation data are represented separately from meta data.

Fig. 8 shows an example of the structure of a broadcasting station according to the other embodiment. In Fig. 8, similar portions to those in the structure of the broadcasting station of the above-described embodiment (shown in Fig. 2) are denoted by similar reference numerals and their description is omitted. In the other embodiment, a segmentation data storing portion 211 is disposed. As with the above-described embodiment, a contents segmenting portion 204 generates segmentation data for selecting a particular segment from successive data that is supplied from a contents storing portion 203. The segmentation data is supplied to a segmentation data storing portion 211.

The segmentation data storing portion 211 stores parameters for identifying a particular segment along with a segment identifier for identifying a particular segment of contents data. The parameters are for example start time and duration or start time and end time of a segment. The segment identifier is supplied to a meta data combining portion 202. The meta data combining portion 202 correlates meta data of a particular segment of successive data corresponding to the segment identifier with segmentation data in the format corresponding to the structure of the meta data

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schema, combines them as meta data with a segment
identifier, and outputs it.

For example, as meta data of a particular
program or meta data of a segment of a program, a
segment identifier for identifying the program or the
segment is output. In the case that a program is a
segment, a segment identifier is added to meta data
"program title: seven o'clock news" and "program genre:
news" and the resultant data is output. In the case of
a segment of a program, a segment identifier is added
to meta data for example "news genre: politics" and the
resultant data is output. The output data contains an
identifier of a meta data schema corresponding to the
meta data.

Meta data with a segment identifier that is
output from the meta data combining portion 202 is
processed in the same manner as the above-described
embodiment. Likewise, a meta data schema and contents
data are processed in the same manner as the above-
described embodiment. Segmentation data that is
supplied from the segmentation data storing portion 211
is supplied to a segmentation data transmission
controlling portion 213 through a segmentation data
converting portion 212. The segmentation data
converting portion 212 converts the segmentation data
stored in the segmentation data storing portion 211 in
a transmission format. Although the descriptive format

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may vary for each contents data or each information provider, the segmentation data converting portion 212 converts the segmentation data in one transmission format. In this case, various types of transmission formats can be used. For example, data can be represented in an MPEG system section format.

A meta data schema transmission controlling portion 208, a meta data transmission controlling portion 209, a contents transmission controlling portion 210, and a segmentation data transmission controlling portion 213 control the transmissions of the meta data schema, meta data with the segment identifier, contents data, and segmentation data converted in the transmission format against the transmission path.

Fig. 9 shows an example of the structure of a receiving terminal unit according to the other embodiment of the present invention. In Fig. 9, similar portions to those in the structure of the receiving terminal unit according to the above-described embodiment of the present invention (shown in Fig. 3) are denoted by similar reference numerals and their description is omitted. In the receiving terminal unit according to the other embodiment, a segmentation data reception controlling portion 316 is disposed. The segmentation data reception controlling portion 316 controls the reception of segmentation data

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transmitted through the network.

Received segmentation data is supplied to a segmentation data restoring portion 317. The segmentation data restoring portion 317 restores the received segmentation data in a format so that the terminal unit can easily use the segmentation data. The restored segmentation data is stored to a segmentation data storing portion 318.

Corresponding to the segmentation identifier of the selected meta data and the segmentation data stored in the segmentation data storing portion 318, a contents reproduction controlling portion 313 restructures segments of the successive data. A data displaying portion 315 displays the resultant contents data. On the other hand, a meta data display controlling portion 314 controls the meta data displayed on the data displaying portion 315. When a communication controlling portion (not shown) is disposed, a meta data schema, meta data, segmentation data, and contents data can be requested and received through the bidirectional network 105.

Next, the other embodiment of the present invention will be further described. Fig. 10 shows an example of a meta data schema. When the genre of contents data is a news program, it is categorized as general, local, politics, economics, and sports. In addition, the news is classified as domestic and

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overseas. In this case, segmentation data is shown in
Fig. 11. As shown in Fig. 11, segmentation data of
each segment is composed of a segment identifier and
parameters. Fig. 12 shows an example of meta data
corresponding to a meta data schema shown in Fig. 10.
In the other embodiment, a segment identifier is added
to meta data and the resultant data is transmitted.

According to the other embodiment, since
segmentation data is represented independently from
meta data and they are separately transmitted, a
segment of contents data of different mediums can be
identified with the same identifier. Fig. 13 shows the
structure of a medium conversion between a transmitting
medium 41 and a storing medium 43 that are different
mediums. In the transmitting medium 41, a program is
normally identified with information of channel and
time 42. On the other hand, in the storing medium 43,
the position on the medium is normally defined with
information of cylinder and sector 44.

To exchange data according to the other
embodiment between the medium 41 and the medium 43,
converting portions 45, 46, 47, and 48 are disposed
therebetween. The converting portion 45 converts a
meta data schema in a suitable format corresponding to
a medium. The converting portion 46 converts meta data
in a suitable format corresponding to a medium. The
converting portion 47 converts segmentation data in a

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suitable format corresponding to a medium. The converting portion 48 converts contents data in a suitable format corresponding to a medium. In addition to converting the descriptive format of segmentation data, the segmentation data converting portion 47 converts parameters of segmentation data corresponding to the descriptive format of a segment of contents data identified by the converted descriptive format of the segmentation data.

In this case, in the segment identifier, only parameters are converted in a suitable format corresponding to a medium. Figs. 14, 15, and 16 show examples of segmentation data. Fig. 14 shows an example of which the medium 41 is a digital broadcast of which channel identifier Service ID = Svc #1 and Event ID = E#5. Fig. 15 shows an expression of segmentation data in the case that events shown in Fig. 14 are stored to one file of which the medium 42 is a hard disk and of which drive ID = D and file name = news mpl. Fig. 16 shows an expression of segmentation data in the case that the events shown in Fig. 14 are successively stored to files of which the medium 42 is a hard disk and of which drive ID = D and file name = news mpl.

According to the present invention, with segmentation data, the reproduction of contents data can be controlled. Thus, any segments of successive

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data can be restructured as contents data corresponding to a user's favorite. Thus, data can be effectively delivered and flexibly and selectively received. In addition, segmentation information and meta data are represented using RDF/XML in WWW. The resultant data is converted in a suitable transmission format such as the MPEG-2 format or IP format. Thus, meta data can be more flexibly delivered. Moreover, according to the present invention, since segmentation data is separately represented and transmitted, segmentation information can be stored and used between different mediums.

1.   A transmitting apparatus for providing
contents data composed of successive data, comprising:

meta data schema storing means for storing
the data structure of meta data of the contents data;

contents segmenting means for generating
segmentation information of the contents data;

meta data combining means for correlating the
segmentation information of the contents data with the
meta data;

meta data converting means for converting the
meta data with the segmentation data combined by said
meta data combining means in a transmission format;

meta data schema converting means for
converting the meta data schema stored in said meta
data schema storing means in the transmission format;
and

transmitting means for transmitting the meta
data with the segmentation information in the
transmission format, the meta data schema in the
transmission format, and the contents data through a
transmission path.

2.   A transmitting apparatus for providing
contents data composed of successive data, comprising:

meta data schema storing means for storing
the data structure of meta data of the contents data;

contents segmenting means for generating

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segmentation information of the contents data;

segmentation information storing means for storing the segmentation information of the contents data;

meta data combining means for correlating an identifier of the segmentation information with the meta data;

meta data converting means for converting the meta data with the identifier combined by said meta data combining means in a transmission format;

meta data schema converting means for converting the meta data schema stored in said meta data schema storing means in the transmission format;

segmentation information converting means for converting the segmentation information stored in said segmentation information storing means in the transmission format; and

transmitting means for transmitting the meta data with the identifier in the transmission format, the meta data schema in the transmission format, the segmentation information, and the contents data through a transmission path.

3.   The transmitting apparatus as set forth in claim 1 or 2,

wherein said meta data schema converting means converts the meta data schema and represents the meta data schema in an MPEG system section format.

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4.   The transmitting apparatus as set forth in
claim 1 or 2,

          wherein said meta data converting means
converts the meta data with the segmentation
information and represents the meta data with the
segmentation information in a descriptor format of an
MPEG system section.

5.   A receiving apparatus for presenting contents
data composed of successive data; comprising:

          meta data schema storing means for storing
the data structure of meta data of the contents data;

          meta data storing means for storing meta data
with segmentation information of the contents data;

          user profile operating means for operating
user's favorite information;

          meta data analyzing means for collating the
meta data schema, the meta data, and the user profile;

          contents reproduction controlling means for
controlling the reproduction of the contents data
corresponding to segmentation information that is
output from said meta data analyzing means;

          receiving means for receiving meta data with
segmentation information in a transmission format, a
meta data schema in the transmission format, and
contents data through a transmission path;

          meta data schema restoring means for
restoring the meta data schema in the transmission

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format into meta data schema in a storage format of
said meta data schema storing means; and

meta data restoring means for restoring the
meta data with the segmentation information in the
transmission format into meta data with segmentation
information in a storage format of said meta data
storing means.

6.   A receiving apparatus for presenting contents
data composed of successive data; comprising:

meta data schema storing means for storing
the data structure of meta data of the contents data;

meta data storing means for storing meta data
with an identifier of segmentation information of the
contents data;

segmentation information storing means for
storing the segmentation information;

user profile operating means for operating
user's favorite information;

meta data analyzing means for collating the
meta data schema, the meta data, and the user profile;

contents reproduction controlling means for
controlling the reproduction of the contents data
corresponding to segmentation information that is
output from said meta data analyzing means;

receiving means for receiving meta data with
the identifier in a transmission format, a meta data
schema in the transmission format, segmentation

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information in the transmission format, and contents
data through a transmission path;

  meta data schema restoring means for
restoring the meta data schema in the transmission
format into meta data schema in a storage format of
said meta data schema storing means;

  meta data restoring means for restoring the
meta data with the identifier in the transmission
format into meta data with an identifier in a storage
format of said meta data storing means; and

  segmentation information restoring means for
restoring the segmentation information in the
transmission format into segmentation information in a
storage format of said segmentation information storing
means.

ABSTRACT

A meta data schema that represents the
structure of meta data of contents data stored in a
contents storing portion 203 is stored in a meta data
schema storing portion 201. A contents segmenting
portion 204 generates segmentation data for selecting a
particular segment from successive data supplied from
the contents storing portion 203 and supplies the
generated segmentation data to a meta data combining
portion 202. The meta data combining portion 202
correlates meta data of the particular segment of the
successive data corresponding to the segmentation data
with the segmentation data in a format corresponding to
the structure of the meta data schema, combines the
meta data with the segmentation data, and outputs the
combined data. The meta data schema, meta data with
segmentation data, and contents data are converted in a
transmission format.

Fig. 1

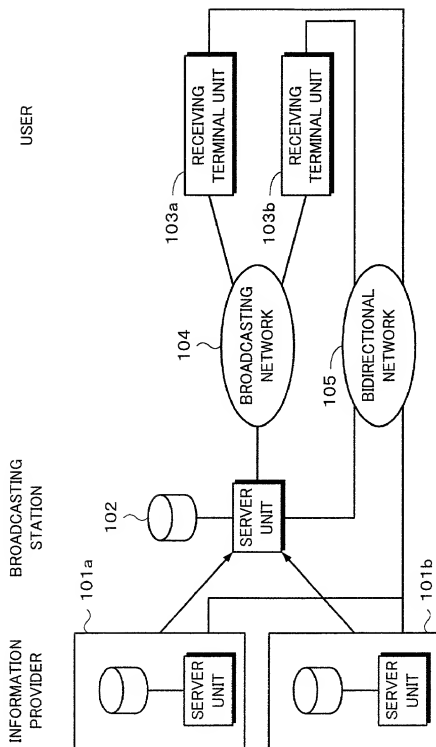

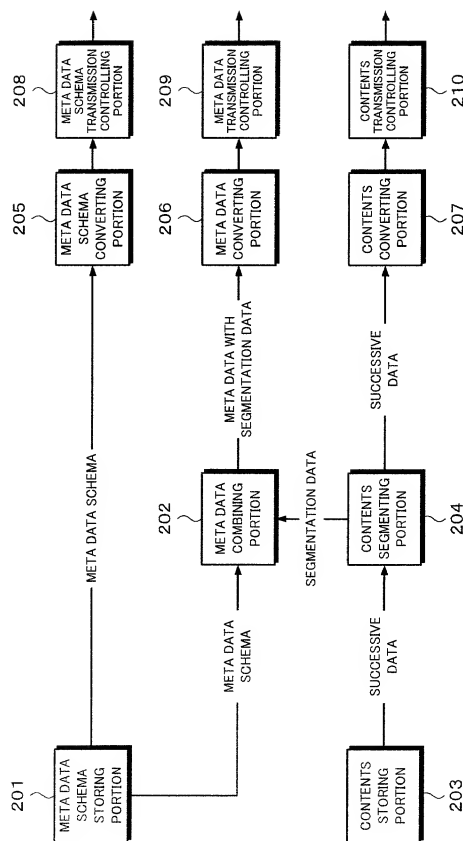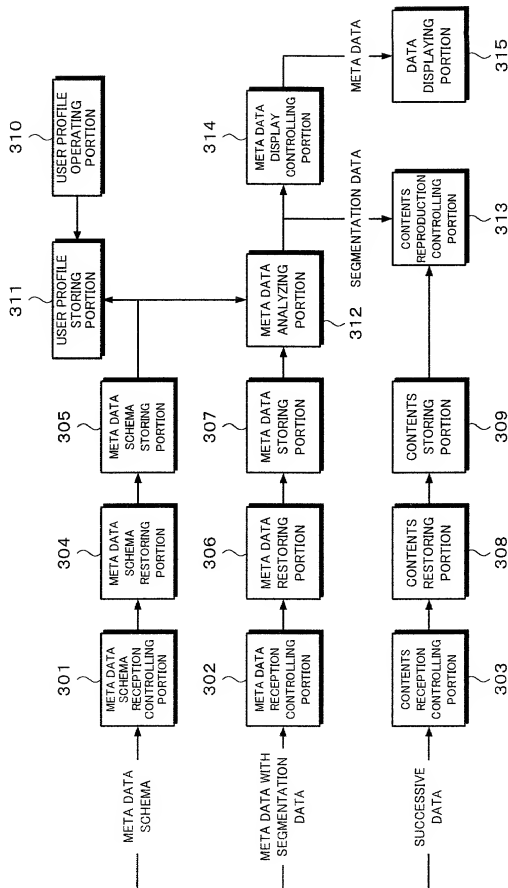INFORMATION PROVIDER

BROADCASTING STATION

USER

101a

101b

102

SERVER UNIT

SERVER UNIT

SERVER UNIT

104 BROADCASTING NETWORK

105 BIDIRECTIONAL NETWORK

103a RECEIVING TERMINAL UNIT

103b RECEIVING TERMINAL UNIT

Fig. 2

Fig. 3

Fig. 4

Fig. 5

```
<Service id = "Svc#1">
<Event id = "E#5" start_time =20:00 duration=02:00>
 <Segment id="S#1" start_time=20:00 duration =00:20/>
 <Segment id="S#2" start_time=20:20 duration=01:20/>
 <Segment id="S#3" start_time=21:40 duration=00:20/>
 <Segment id="S#4" start_time=20:30 duration=00:20/>
 <Segment id="S#5" start_time=21:00 duration=00:30/>
 ......
</Event>
</Service>
```

Fig. 6

Fig. 7

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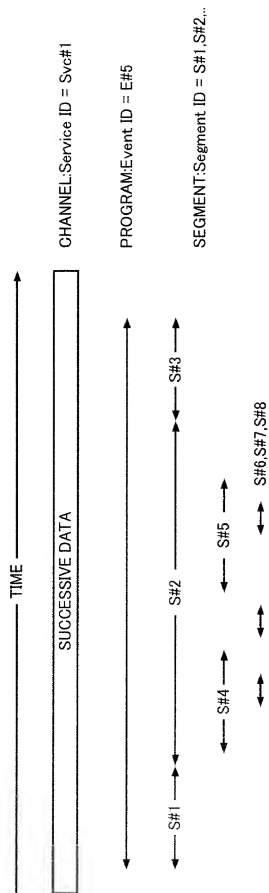
Fig. 8
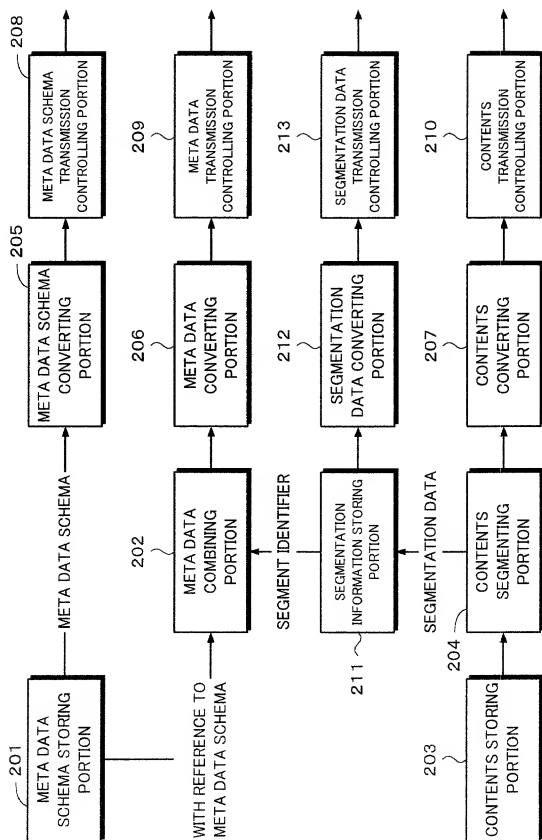
Fig. 9

Fig. 10

Fig. 11

```
..
<Segment ID="S#3" start_time=xx:xx duration=xx:xx/>
..
<Segment ID="S#5" start_time=xx:xx duration=xx:xx/>
..
```

Fig. 12

```
<Segment ID="S#3">
      <News:Category ID="Politics"/>
      <News:Area ID="Domestic"/>
</Segment>
<Segment ID="S#5">
      <News:Category ID="Sports"/>
      <News:Area ID="international"/>
</Segment>
```

Fig. 13

META DATA SCHEMA

META DATA SCHEMA MEDIUM CONVERTING PORTION — 45

META DATA

SEGMENT IDENTIFIER

META DATA MEDIUM CONVERTING PORTION — 46

SEGMENTATION DATA

SEGMENTATION DATA MEDIUM CONVERTING PORTION — 47

CONTENTS

CONTENTS MEDIUM CONVERTING PORTION — 48

MEDIUM A (TRANSMITTING MEDIUM) — 41

(CHANNEL · TIME) — 42

META DATA SCHEMA

META DATA

SEGMENT IDENTIFIER

SEGMENTATION DATA

CONTENTS DATA

MEDIUM B (STORING MEDIUM) — 43

(CYLINDER · SECTOR) — 44

Fig. 14

```
<Service id="Svc#1">
  <Event id="E#5" start_time=20:00 duration=02:00>
    <Segment id="S#1" start_time=20:00 duration=00:20/>
    <Segment id="S#2" start_time=20:20 duration=01:20/>
    <Segment id="S#3" start_time=21:40 duration=00:20/>
    <Segment id="S#4" start_time=20:30 duration=00:20/>
    <Segment id="S#5" start_time=21:00 duration=00:30/>
      . . . . . .
  </Event>
</Service>
```
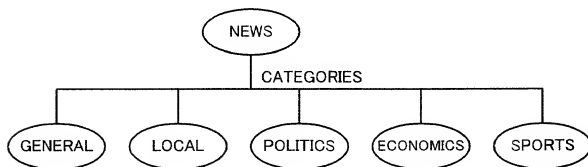
Fig. 15

```
<Drive id="D:">
  <File id="news.mp1" duration=02:00>
    <Segment id="S#1" start_time=00:00 duration=00:20/>
    <Segment id="S#2" start_time=00:20 duration=01:20/>
    <Segment id="S#3" start_time=01:40 duration=00:20/>
    <Segment id="S#4" start_time=00:30 duration=00:20/>
    <Segment id="S#5" start_time=01:00 duration=00:30/>
      . . . . . .
  </File>
</Drive>
```
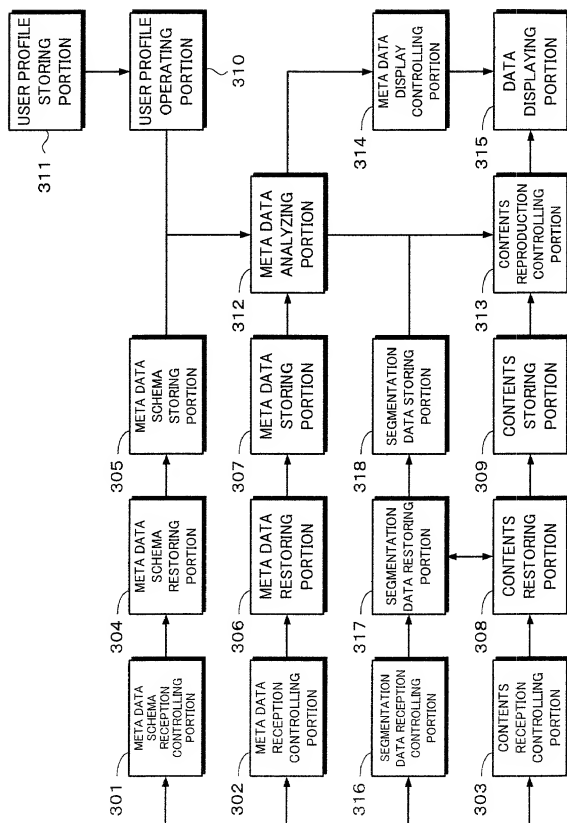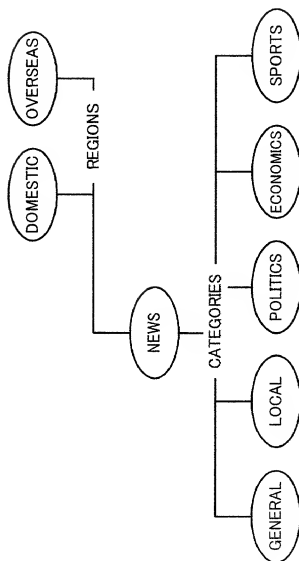
Fig. 16

```
<Drive id="D:">
  <Segment id="S#1" resource="file:news1.mp1"/>
  <Segment id="S#2" resource="file:news2.mp1"/>
  <Segment id="S#3" resource="file:news3.mp1"/>
  <Segment id="S#4" resource="file:news4.mp1"/>
  <Segment id="S#5" resource="file:news5.mp1"/>
    . . . . . .
</Drive>
```

202	META DATA COMBINING PORTION
204	CONTENTS SEGMENTING PORTION
211	SEGMENTATION INFORMATION STORING PORTION
212	SEGMENTATION DATA CONVERTING PORTION
313	CONTENTS REPRODUCTION CONTROLLING PORTION

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特許出願宣言書及び委任状

Japanese Language Declaration

日本語宣言書

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As a below names inventor, I hereby declare that:

私の住所、郵便の宛先そして国籍は、私の氏名の後に記載された通りである。

My residence, post office address and citizenship are as stated next to my name:

下記の名称の発明について、特許請求範囲に記載され、且つ特許が求められている発明主題に関して、私は、最初、最先且つ唯一の発明者である（唯一の氏名が記載されている場合）か、或いは最初、最先且つ共同発明者である（複数の氏名が記載されている場合）と信じている。

I believe I am the original, first and sole inventor if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled.

Transmitting Apparatus and

Receiving Apparatus

the specification of which is attached hereto unless the following box is checked:

上記発明の明細書はここに添付されているが、下記の枠がチェックされている場合は、この限りでない：

☒ was filed on January 28, 2000
as United States Application Number of
PCT International Application Number   PCT/JP00/00461
_____ and was amended on
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この出願の米国出願番号またはPCT国際出願番号は、
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I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

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Prior Foreign Application(s)

外国での先行出願

Priority Not Claimed

優先権主張なし

(Number) （番号）	(Country) （国名）	(Day/Month/Year Filed)	
11-023220	Japan	29 January 1999	☐
PCT/JP00/00461	PCT	28 January 2000	☐
(Number) （番号）	(Country) （国名）		☐
(Number) （番号）	(Country) （国名）	(Day/Month/Year Filed)	☐
(Number) （番号）	(Country) （国名）	(Day/Month/Year Filed)	☐
(Number) （番号）	(Country) （国名）	(Day/Month/Year Filed)	☐
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(Filing Date) （出願日）

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(Application No.) （出願番号）

(Filing Date) （出願日）

(Status: Patented, Pending, Abandoned)
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Full name of fourth joint inventor, if any

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POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact al business in the Patent and Trademark Office connected therewith (list name and registration number)

委任状：私は本出願を審査する手続きを行い、且つ米国特許商標庁との全ての業務を遂行するために、記名された発明者として、下記の弁護士及び／または弁理士を任命する。（氏名及び登録番号を記載すること）

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